

# Correspondence

*The Editorial Board will be pleased to receive and consider for publication correspondence containing information of interest to physicians or commenting on issues of the day. Letters ordinarily should not exceed 600 words, and must be typewritten, double-spaced and submitted in duplicate (the original typescript and one copy). Authors will be given an opportunity to review any substantial editing or abridgement before publication.*

## Ocular Effects of Gravity Inversion

TO THE EDITOR: In a letter to the editor entitled "More on Gravity Inversion" in the August 1984 issue,<sup>1</sup> Goldman and colleagues conclude that oscillating about a horizontal axis during gravity inversion instead of hanging statically is a safe activity and specifically poses no risk to the eyes. They allude to different results in a new study and they state that "the hydrostatic increase in intraocular and central retinal artery pressure balance and protect each other. . . . Each prevents the other from damage." Unfortunately, this conclusion is unsupported by facts.

In the original study that Goldman co-authored,<sup>2</sup> he and his colleagues determined that the intraocular pressure (IOP) increased 84% from an average of 19 to 35 mm of mercury after three minutes of static inversion and suggested that because of the significant elevation of IOP, visual fields and tonometry be carried out before embarking on an inversion program. In the "new" work that was alluded to in the letter and now published,<sup>3</sup> he and his associates reported that with oscillation IOP rose from a preinversion level of 17 to 33, 32 and 31 mm of mercury at 5, 10 and 15 minutes, respectively. The net increases were thus 94%, 88% and 82%, depending upon the duration of inversion. The "new" IOP results are virtually identical with those found in their earlier study; yet, despite this fact, Goldman and associates reach completely different conclusions and now declare that inversion with oscillation is safe. I find this a most peculiar turn of events.

My ophthalmologist colleagues and I have investigated many of the ocular effects of gravity inversion.<sup>4-6</sup> We recently have evaluated optic nerve function in normal subjects during inversion and have demonstrated significant depressions of the amplitude of visual signals conducted from the eyes to the occipital cortex (pattern reversal visual evoked potentials) and have also demonstrated visual field defects. These alterations in function, although they disappear upon returning to the upright position, are undoubtedly related to the intraocular pressure rise during inversion and are found also in patients with glaucoma without inversion. Hence, the statement that the body completely compensates for the intraocular pressure rise during inversion activities by increasing perfusion is mere fantasy with respect to these functional tests.

It remains uncertain whether healthy persons who use gravity inversion equipment for short daily intervals over several years will suffer any permanent damage from increased IOP. Nevertheless, enthusiasts of inversion ought to at least be informed of the potential risk to the eyes, although it may be limited. Furthermore, this risk can probably be

reduced by decreasing the inversion times to short 10 or 15 minute intervals. Since elevated IOP is usually asymptomatic, the authors' previous suggestion<sup>2</sup> that potential inversion devotees at least have an initial baseline intraocular pressure measurement to determine if they are at special risk is appropriate. This seems a more prudent and responsible approach than to come to a totally different conclusion, based on essentially unchanged data and mere speculation, as the authors did in their letter.

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## Dr Goldman Replies

TO THE EDITOR: Thank you for the opportunity to respond to Dr Friberg's comments. I think some points should be clarified. When we published the first study ever to examine the physiologic effects of static inversion (utilizing gravity inversion boots) several years ago, we were at first alarmed at our findings, as we did not expect to see such dramatic elevations in intraocular pressure (IOP), central retinal arterial and systemic blood pressure.<sup>1</sup> Upon further examination we attempted to note responses to other forms and techniques of inversion (compared with vigorous exercise levels,<sup>2</sup> in hypertensives<sup>3</sup> and oscillating<sup>4,5</sup>). Throughout all our studies we have always stressed that all participants undergo a cardiovascular and ocular examination.

We were, however, dismayed by the sensationalized media coverage of our papers and other research papers proclaiming that this type of adjunct training was not safe for anyone. We then set out to find if oscillating techniques would afford any variance from our original data in a pilot study. As Dr Friberg so astutely pointed out, our data in the mentioned pilot study<sup>4</sup> (later performed with well-trained subjects) were

similar to static inversion results, but he chose to ignore the significant subjective responses of the subjects recorded in the questioned article, and systemic blood pressure and pulse rate readings. As mentioned, we found the subjects not to experience the "headaches, nausea, head congestion, dizziness—while experiencing a calm, relaxed feeling of well being and tranquility." Please note that in our original studies subjects were inverted for only 3 minutes statically, versus 15 minutes of oscillation in this study. This, of course, is not hard statistical data but aided us in developing a manner in which the oscillating devices may differ from static hanging boots with a stationary bar.

Our reference to aerospace studies<sup>6</sup> was an attempt to discern why we have not as yet noted in the medical literature cases of stroke, cardiovascular incidents or eye injury in normal persons in the nearly two decades these devices have been popular. There have been some sparse reports of periorbital petechiae and transient engorgement of the scleral capillaries, but mostly those were in untrained persons subjected to prolonged periods of static hanging or anticoagulants (or both) in almost subtle attempts to induce side effects. In one study we were sent to review, the researchers inverted subjects statically for three 10-minute periods in a row following administration of aspirin.

We agree with Dr Friberg and colleagues that there may be some long-term effects associated with inversion; however, we think in addition to evaluations of potential glaucoma associations, energies might also well be spent on discerning how to invert and for what time period for maximum safety.

IOPs should be tested on a regular basis should glaucoma be a concern, but we have already stressed this numerous times. I believe if one were able to measure the above mentioned parameters on some centrifugal rides at amusement parks or during deep sea diving, the results might bring this issue into better perspective.

We recommend that persons who wish to invert use an oscillating device and do not stay in the inverted (−90 degree) posture for more than a few seconds, while heeding their own body responses, and for no more than 15 minutes. Please note again that although the data were similar, the device utilized was quite different and the subject population was one trained in inversion, and their subjective experiences were significantly different from those in previous studies.

Perhaps future work will better outline guidelines for use of intermittent traction with inversion devices, but we feel that compared with many other forms of adjunct athletic training, inversion should not stand apart from such activities as powerlifting, scuba diving or plyometrics. There are risks inherent in all, but before condemning the modality I would like to see more documented statistical data reporting cases of ocular injury in healthy people (those without hypertension or glaucoma tendencies) who utilize inversion in the manner we outline.

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## Medi-Cal Reimbursement System

TO THE EDITOR: The news media report Medi-Cal (California's medicaid program) fraud from time to time. Periodically, some provider bills for services never performed and gets caught. This is relatively trivial fraud but should be prosecuted. The significant Medi-Cal fraud, however, is that perpetrated upon Medi-Cal providers. No doctor who cares for Medi-Cal patients is immune to ripoff.

The doctor who renders care in good faith and then bills Computer Sciences Corporation (CSC) may never get paid. The claim may not be done precisely as CSC wishes it done. If this is the case, there will be a request for more or correct information. Even when the missing information is supplied, there is no assurance of reimbursement. If the diagnosis is cancer and there are two office visits in one month, for example, one visit will be paid at about half the usual and customary charge and the other visit will not be paid at all. If a patient is seen many times in one month in an effort to avoid admission to hospital, the state will save two ways: no hospital costs and disallowed office visits.

My personal litany of CSC experiences is long even though I care for few Medi-Cal patients, all of whom are sick. Obtaining Medi-Cal reimbursement actually is possible. The first thing to do when shortchanged by CSC is to send to that computerized bureaucracy a "Claims Inquiry," a form that is amazingly (for CSC) simple. CSC has no motivation at all to be sympathetic and unless there is a compelling reason, such as a mistake on their part, the "Claims Inquiry" may go nowhere. Don't stop there.

Although there is no motivation on the part of CSC to please the doctor, a letter to CSC from my assemblyman works wonders. For example, the claim for a patient with intractable pain who had to be seen at least once a week suddenly became valid.

Every California doctor has an assemblyperson. When all else fails, turn your Medi-Cal reimbursement problems over to her or him. There is no need to be embarrassed by doing so. Our legislators need to be made aware that the Medi-Cal reimbursement system isn't working. They and you will benefit.

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## On the 'Blackness' and 'Whiteness' of Patients

TO THE EDITOR: Like so many articles on osteoporosis and hypertension, the conference on estrogen<sup>1</sup> for postmenopausal women in the May issue differentiates black people from whites. I have long believed that this differentiation is